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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/519,148 03/06/00 LIPSHUTZ

R 18547-009911

EXAMINER
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HM12/1106

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ART UNIT	PAPER NUMBER
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1655

DATE MAILED:

11/06/01

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

## Office Action Summary

**Application No.**

09/519,148

**Applicant(s)**

LIPSHUTZ ET AL.

**Examiner**

Bradley L Sisson

**Art Unit**

1655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2001 and 17 August 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 80-107 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 80-107 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 March 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

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the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 80-83, 85-96, and 98-107 remain rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wilding et al. US Patent 5,587,128).

6. Wilding et al., at columns 20-26 disclose a method for extracting and purifying DNA and subsequently performing an amplification reaction of same followed by detection of the amplification product. As can be seen in said columns, the reactions are performed in an apparatus that is comprised of at least two reaction chambers and that the sample is caused to move from one reaction chamber to another.

7. Column 18 discloses the adaptation of devices so to effect fluid movement and the separation of nucleic acid sequences via electrophoresis. In view of the miniscule size of the apparatus disclosed, such is considered to meet the limitation of "microcapillary electrophoresis" (claims 83 and 96).

8. The aspect of isolating nucleic acid from a sample is considered to meet the limitation of "neutralizing and infectious agent or performing pH adjustment."

9. Claims 84 and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilding et al., (US Patent 5,587,128) as applied to claims 80-83, 85-96, and 98-107 above, and further in view of Schnipelsky et al., and Fodor et al. (US Patent 5,424,186).

10. Wilding et al., at columns 20-26 disclose a method for extracting and purifying DNA and subsequently performing an amplification reaction of same followed by detection of the

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amplification product. As can be seen in said columns, the reactions are performed in an apparatus that is comprised of at least two reaction chambers and that the sample is caused to move from one reaction chamber to another.

11. Column 18 discloses the adaptation of devices so to effect fluid movement and the separation of nucleic acid sequences via electrophoresis. In view of the miniscule size of the apparatus disclosed, such is considered to meet the limitation of "microcapillary electrophoresis" (claims 83 and 96).

12. The aspect of isolating nucleic acid from a sample is considered to meet the limitation of "neutralizing and infectious agent or performing pH adjustment."

13. Wilding et al., do not disclose the aspect of an array of probes for conducting a hybridization reaction with an amplification product.

14. Schnipelsky et al., disclose a capillary device used in conducting amplification reactions. As seen in Fig. 1 and Fig. 3, there is found a region of the device wherein is located an array of probes (see also column 13, second paragraph).

15. The size of the channels disclosed by Schnipelsky et al., are not considered to constitute a "microcapillary."

16. Fodor et al., disclose a method whereby arrays of nucleic acid sequences are synthesized onto minute areas of a solid support. Column 67, ;last paragraph, bridging to column 68, discloses the use of confocal microscopy for the detection of results.

17. It would have been obvious to one of ordinary skill in the art to have modified the apparatus of Wilding et al., with the teachings of Schnipelsky et al., and Fodor et al., so to arrive at a method of preparing a nucleic acid sample, amplifying and detecting an amplification

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product whereby all of said steps are performed in a microfluidic device. In view of the well develop aspect of the prior art, and the explicit teachings of combining a variety of steps/procedures into a single device, the ordinary artisan would have been highly motivated to have devised such an apparatus and method and would have had a reasonable expectation of success.

18. At page 6 of the response received 12 February 2001 it is asserted that sample preparation, amplification and detection “are not preformed in two separate chambers” (emphasis in the original). Applicant asserts further that the invention is made obvious only by the application of hindsight.

19. The above argument has been fully considered and has not been found persuasive. Upon review of the teachings of Wilding et al., (US Patent 5,587,128) it is noted that the teaching is replete with statements to the effect that the sample is, in one embodiment allowed to move back and forth between two chambers for various stages of amplification (column 17) as well as moving forward through various channels and chambers for filtration, amplification and detection. In column 22, for example, it is explicitly stated that

The mesoscale flow system includes a chamber for lysing cells from a sample in preparation for downstream polynucleotide analysis.

20. In columns 23 and 24 the disclosure states further that the device comprises flow channels and that they may be fitted with filters (24A). Column 24 teaches of the use of microchannels (26) for use in performing electrophoresis. It is noted that element (24A) occurs prior to element (26) (see Figure 10).



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21. Wilding et al., column 19, teaches the use of magnifying lenses so to aid in the detection of results in microchannels. The use of such magnification and detection means is considered to meet the limitation of confocal microscopy. In the event that such does not meet the limitation of confocal microscopy, the rejection of all of the above-identified claims, sans claim 84, is still applicable, as the aspect of performing confocal microscopy is not required. In support of this position attention is directed to claims 80, 93, and 106, the three independent claims currently before the Office. In each instance a group of alternative processes are listed and identified, in the alternative, as being performed in "at least two chambers." Even if Wilding et al., the use of such detection means would have been obvious to one of ordinary skill in the art at the time the invention was made, especially in light of the very nature of the size of the devices which Wilding describes as being "mesoscale." And even if such would not have been obvious by the teachings of Wilding et al., alone, it would have been obvious in view of the teachings of Fodor et al., (US Patent 5,424,186) which teaches explicitly of the use of confocal microscopy.

22. In view of the foregoing remarks and in the absence of convincing evidence to the contrary, the rejection is maintained.

### ***Conclusion***

23. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

24. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

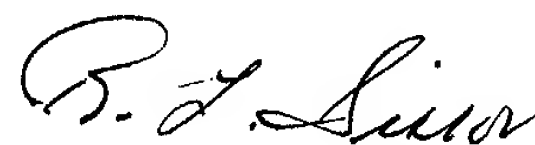
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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bradley L Sisson whose telephone number is (703) 308-3978. The examiner can normally be reached on 6:30 a.m. to 5 p.m., Monday through Thursday.

26. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, W. Gary Jones can be reached on (703) 308-1152. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3592 for regular communications and (703) 308-0294 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.



Bradley L Sisson  
Primary Examiner  
Art Unit 1655

bls  
November 5, 2001